

What is claimed is:

1. A device comprising an isotopically enriched piezoelectric material.
2. The device of claim 1 wherein said isotopically enriched piezoelectric material comprises a single crystal structure.
3. The device of claim 1 wherein said isotopically enriched piezoelectric material comprises isotopically enriched silicon dioxide.
4. The device of claim 2 wherein said isotopically enriched piezoelectric material comprises isotopically enriched silicon dioxide.
5. The device of claim 1 wherein said isotopically enriched piezoelectric material comprises isotopically enriched silicon dioxide having a higher proportion of the Si₂₈ isotope than is present in naturally occurring silicon dioxide.
6. The device of claim 1 wherein said isotopically enriched piezoelectric material comprises isotopically enriched silicon dioxide wherein at least 94% of the silicon component of said silicon dioxide is Si₂₈.
7. The device of claim 1 wherein said isotopically enriched piezoelectric material comprises isotopically enriched silicon dioxide wherein at least 99% of the silicon component of said silicon dioxide is Si₂₈.

8. The device of claim 7 wherein said silicon dioxide has a higher proportion of the O16 isotope than is present in naturally occurring silicon dioxide.

9. The device of claim 1 wherein said isotopically enriched piezoelectric material comprises isotopically enriched silicon dioxide having a higher proportion of the Si29 isotope than is present in naturally occurring silicon dioxide.

10. The device of claim 1 wherein said isotopically enriched piezoelectric material comprises isotopically enriched silicon dioxide having a higher proportion of the Si30 isotope than is present in naturally occurring silicon dioxide.

11. The device of claim 1 wherein said isotopically enriched piezoelectric material comprises isotopically enriched silicon dioxide having a higher proportion of the O16 isotope than is present in naturally occurring silicon dioxide.

12. The device of claim 1 wherein said isotopically enriched piezoelectric material comprises isotopically enriched zinc oxide.

13. The device of claim 1 wherein said isotopically enriched piezoelectric material comprises isotopically enriched titanium dioxide.

14. The device of claim 1 wherein said isotopically enriched piezoelectric material comprises isotopically enriched lithium niobate.

15. The device of claim 1 wherein said isotopically enriched piezoelectric material comprises isotopically enriched lithium tantalate.

16. The device of claim 1 wherein said isotopically enriched piezoelectric material comprises isotopically enriched langasite.

17. The device of claim 1 wherein said isotopically enriched piezoelectric material comprises isotopically enriched langatate.

18. The device of claim 1 wherein said isotopically enriched piezoelectric material comprises isotopically enriched lead-zirconate-titanate.

19. The device of claim 1 wherein said device comprises a clock.

20. The device of claim 1 wherein said device comprises an oscillator.

21. The device of claim 1 wherein said device comprises an acoustic wave filter.

22. The device of claim 1 wherein said device comprises a resonator.

23. The device of claim 1 wherein said device comprises a transducer for an ultrasonic surgical instrument.

24. The device of claim 1 wherein said device comprises a transducer.

25. The device of claim 1 wherein said device comprises a speaker.

26. The device of claim 1 wherein said device comprises an ultrasonic speaker.

27. The device of claim 1 wherein said device comprises a buzzer.

28. The device of claim 1 wherein said device comprises a radar system.

29. The device of claim 28 further comprising a low phase noise reference oscillator having a resonator comprising said isotopically enriched piezoelectric material.

30. The device of claim 1 comprising a transducer for a non-linear response ultrasonic beam speaker system.

31. The device of claim 1 comprising a transducer for an ultrasonic cleaning system.

32. A method for producing a single crystal of an isotopically enriched piezoelectric material comprising the steps of:

obtaining said isotopically enriched material in powder form;

converting said isotopically enriched material powder into dendrite crystals by means of a first hydrothermal process; and

producing a single crystal from said dendrite crystals by means of a second hydrothermal process.